AMENDMENTS TO THE CLAIMS

Please amend Claims 1, 14, 26 and 30.

1. (Currently Amended) A system for monitoring consumption of utilities by semiconductor fabrication processes, comprising:

at least one semiconductor process tool comprising a plurality of process-control devices for controlling process conditions within the process tool;

at least one tool controller communicating with the plurality of process-control devices according to a process recipe for treating workpieces within the process tool; and

computer software residing in a memory of said tool controller, the computer software configured to collect data reflecting resource consumption from the plurality of devices and to compile and store said data ~~compiling and storing data relating to the consumption of resources by the tool~~.

2. (Original) The system of Claim 1, wherein the plurality of process-control devices include at least one heating element and at least one mass flow controller.

3. (Original) The system of Claim 2, wherein the computer software compiles and stores data relating to the power output to the at least one heating element and gas flow through the at least one mass flow controller.

4. (Original) The system of Claim 1, wherein the computer software calculates resource consumption from inputs originating from the process-control devices and fed back into the tool controller.

5. (Original) The system of Claim 4, wherein the computer software further calculates resource consumption from outputs from the tool controller to the process-control devices.

6. (Original) The system of Claim 1, wherein the computer software is configured to collect data reflecting resource consumption from the plurality of devices at a high frequency and to sum the data at a low frequency.

7. (Original) The system of Claim 6, wherein data collected at the high frequency is stored in a short-term memory and data summed at the low frequency is stored in a long-term memory.

8. (Original) The system of Claim 7, wherein data collected at the high frequency is collected at least as frequently as about every 10 seconds, and data summed at the low frequency is summed no more frequently than about every 10 minutes.

9. (Original) The system of Claim 8, wherein data collected at the high frequency is collected at least as frequently at about every second, and data summed at the low frequency is summed no more frequently than about every hour.

10. (Original) The system of Claim 7, wherein a frequency ratio of data collection to data summing is greater than about 100.

11. (Original) The system of Claim 7, wherein a frequency ratio of data collection to data summing is greater than about 1000.

12. (Original) The system of Claim 1, wherein the computer software comprises an editor configured to select user-defined parameters for monitoring.

13. (Original) The system of Claim 12, wherein the user-defined parameters include parameters selected from the group consisting of process gas flows, purge gas flows, electrical power consumption, and cooling water flows.

14. (Currently Amended) The system of Claim 13, wherein the user defined parameters include parameters obtained from the plurality of process control devices~~purge gas flows include a plurality of purge gas parameters at different parts of the semiconductor process tool~~.

15. (Original) The system of Claim 12, wherein the user-defined parameters are monitored by high-frequency sampling of parameter values reported to the process tool controller by the process-control devices.

16. (Original) The system of Claim 15, wherein a rate of the high-frequency sampling is user-controlled at the editor.

17. (Original) The system of Claim 15, wherein the high-frequency sampling rate is at least as frequent as once every 10 seconds.

18. (Original) The system of Claim 15, wherein the high-frequency sampling is at least as frequent as every second.

19. (Original) The system of Claim 16, wherein the high-frequency sampling is summed in a low-frequency summing of sampled parameter value.

20. (Original) The system of Claim 19, wherein a rate of the low-frequency summing is user-controlled at the editor.

21. (Original) The system of Claim 19, wherein the low-frequency summing is conducted at a frequency of no more than once about every ten minutes.

22. (Original) The system of Claim 19, wherein the low-frequency summing is conducted at a frequency of no more than once about every hour.

23. (Original) The system of Claim 12, wherein the computer software further comprises a report generator configured to generate resource consumption reports relating to user-selected ones of the user-defined parameters.

24. (Original) The system of Claim 1, wherein the computer software comprises a report generator configured to generate resource consumption reports relating to user-selected ones of parameters being monitored for consumption of resources.

25. (Original) The system of Claim 24, wherein the report generator allows user selection of a report time span.

26. (Currently Amended) The system of Claim 25, wherein the report generator allows user selection of a report time resolution, wherein the report time resolution establishes a time interval represented by parameter values displayed in the report.

27. (Original) The system of Claim 24, wherein the resource consumption reports contain summed parameter values and process recipe details.

28. (Original) The system of Claim 24, wherein the resource consumption reports contain summed parameter values.

29. (Original) The system of Claim 1, wherein a user interface of the computer software is integrated into a user interface of the tool controller.

30. (Currently Amended) A method of determining resource consumption on a semiconductor process tool, the method comprising:

monitoring electronic inputs and outputs controlling a semiconductor process recipe; and

calculating resource consumption from said inputs and outputs,

wherein monitoring and calculating are performed on the semiconductor process tool.

31. (Original) The method of Claim 30, wherein said inputs and outputs include analog signals.

32. (Original) The method of Claim 31, wherein said inputs and outputs include digital signals.

33. (Original) A method for automatically monitoring consumption of utilities in at least one process tool with software connected to the process tool, comprising:

conducting continual high-frequency sampling of data relating to consumption of utilities from a plurality of devices comprising said process tool and storing said data in short-term memory;

at specified intervals, calculating sums of said data, storing said sums in long-term memory, and erasing said data from short-term memory; and

based on said sums, generating reports relating to said utility consumption data in response to requests from a user

34. (Original) The method of Claim 33, further comprising allowing user specification of the intervals for calculating sums.

35. (Original) The method of Claim 33, further comprising allowing user definition of parameters to monitor for sampling of data.

36. (Original) The method of Claim 34, further comprising allowing user selection of the user-defined parameters for generating the reports.

37. (Original) The method of Claim 36, further comprising allowing user selection of time periods and resolutions for generating the reports.